

PROCESS USING POLY-BUFFERED STI

ABSTRACT OF THE DISCLOSURE

5 A method of providing a substantially planar trench
isolation region having substantially rounded corners,
said method comprising the steps of: (a) forming a film
stack on a surface of a substrate, said film stack
10 comprising an oxide layer, a polysilicon layer and a
nitride layer; (b) patterning said film stack to form at
least one trench within said substrate, wherein said
patterning exposes sidewalls of said oxide layer,
polysilicon layer and nitride layer; (c) oxidizing the at
least one trench and said exposed sidewalls of said oxide
15 layer and said polysilicon layer so as to thermally grow
a conformal oxide layer in said trench and on said
exposed sidewalls of said oxide layer and said
polysilicon layer; (d) filling said trench with a trench
dielectric material; and (e) planarizing to said surface
20 of said substrate.

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